

**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK**

VIRTUAL SOLUTIONS, LLC,

Plaintiff,

v.

MICROSOFT CORPORATION,

Defendants.

Case No. 1:12-CV-1118-SAS

**REPLY MEMORANDUM OF LAW IN SUPPORT OF MICROSOFT CORPORATION'S  
MOTION FOR SUMMARY JUDGMENT OF INVALIDITY FOR INDEFINITENESS**

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Virtual Solutions makes a series of conclusory assertions that the '353 patent claims, despite their defects, are understandable to skilled readers and should survive an indefiniteness challenge. Virtual Solutions's arguments for definiteness are contrary to the intrinsic evidence. All the asserted claims incorporate a fundamental contradiction about the intended meaning of "physical characteristic signal" that Virtual Solutions cannot overcome with the slanted opinions of its paid consultant, Dr. Vyacheslav Zavadsky.

In addition, dependent claim 8's "virtual environment stimulus generator" is an improper attempt to claim a computer-implemented invention functionally, but without disclosing the necessary algorithms or code in the specification, as required by section 112(6). As a result, this Court should declare the asserted claims invalid as indefinite.

## **I. THE ASSERTED CLAIMS ARE INVALID AS INDEFINITE**

### **A. Insoluble Ambiguity Surrounds the "Physical Characteristic Signal" Term**

As explained in Microsoft's opening brief, claim 1 requires two contrary propositions:

- The "physical characteristic signal" contains within it the required "position information" [see '353 Patent Col. 16:13-17, Ex. 1<sup>1</sup>].
- The "physical characteristic signal" is discrete from the required "position information" [see id. col. 16:23-25].

To satisfy the claim, both of these propositions must be true, but this is a logical impossibility. The result is a paradox, demonstrating the insoluble ambiguity in claim 1. Such claims are ipso facto indefinite. Allen Eng'g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1349

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<sup>1</sup> References to "Exhibit \_\_\_\_" refer to the exhibits attached to the Declaration of Robert Courtney in Support of Microsoft Corporation's Motion for Summary Judgment of Invalidity for Indefiniteness (ECF No. 45). References to "Reply Exhibit \_\_\_\_" refer to the exhibits attached to the Declaration of Robert Courtney in Support of Microsoft Corporation's Reply Memorandum of Law in Support of Microsoft Corporation's Motion for Summary Judgment, filed herewith.

(Fed. Cir. 2002) (finding claim invalid due to inherent contradiction in the claim stemming from use of the word “perpendicular” to describe an element that could only logically be parallel); see also Intermec Techs. Corp. v. Palm, Inc., 738 F. Supp. 2d 522, 547-48 (D. Del. 2010) (finding claim invalid due to an “irreconcilable contradiction within the patent” arising from requirements that data be simultaneously formatted in both a “first style” and a different “second style”).

Virtual Solutions contends that there is no contradiction here because, in its view, the “position information” is contained within the “physical characteristic signal”: “The ‘physical characteristic signal’ is a signal that includes, inter alia, the position information.” [VS Br. 8 (ECF No. 53).] Virtual Solutions argues that claim 1’s requirement that the position information is part of the “physical characteristic signal” does not mean the position information “cannot be used independent of the physical characteristic signal.” [VS Br. 8.]

Virtual Solutions ignores the fact that claim 1 does not recite independently using two claim elements in a vacuum. Instead, claim 1 requires that two specific elements (“said physical characteristic signal” and “said position information”) are two inputs to one function (“generat[ing] a behavior vector”):

analyzing said at least one physical characteristic signal, a change over time of said physical characteristic signal and said behavior model for said at least one virtual actor to **generate a behavior vector of said at least one virtual actor using said position information and said at least one physical characteristic signal**, said behavior vector being generated in real-time; . . . .

[’353 Patent, Col. 16:19-25 (emphasis added) (“limitation 1[d]”).]

If the one input encompasses the other (i.e., if the “physical characteristic signal” includes the “position information,” as Virtual Solutions contends), then the inputs used to generate the behavior vector are (1) the position information and (2) the position information:

. . . to generate a behavior vector of said at least one virtual actor using said position information and said at least one physical characteristic signal [which is at least said position information], . . . .

[’353 Patent, Col. 16:19-25 (emphasis added).]<sup>2</sup> In other words, part of the claim (“said position information”) superfluous, which is improper. Haemonetics, supra n.2, 607 F.3d at 781 (Fed. Cir. 2010) (“[W]e construe claims with an eye toward giving effect to all of their terms, even if it renders the claims inoperable or invalid.” (internal citations omitted)). To avoid this improper redundancy, limitation 1[d] requires the “physical characteristic signal” to be discrete from “said position information.”

The redundancy in limitation 1[d] is especially acute where the physical characteristic signal is nothing more than the “position information.” According to limitation 1[b], the “physical characteristic signal” is at least the position information because limitation 1[b] recites that it includes the recited “position information.” However, the “physical characteristic signal” may, but is not required to, include additional information, because the preamble uses the transitional phrase “comprising,” and limitation 1[b] uses the term “including.” Exergen Corp. v. Wal-Mart Stores, Inc., 575 F.3d 1312, 1319 (Fed. Cir. 2009) (“[T]he term ‘comprising’ . . . is well understood in patent law to mean ‘including but not limited to.’”). In other words, as written, limitation 1[b] covers an embodiment where the physical characteristic signal is only the “position information.” Versa Corp. v. Ag-Bag Int’l, Ltd., 392 F.3d 1325, 1329 (Fed. Cir. 2004) (“Although ‘comprising’ language is not limiting and may include features not recited in the claim, such language cannot be read to require other structure.”).

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<sup>2</sup> Limitation 1[b] introduces the term “position information” by reciting “interpreting said sensor signals to provide at least one physical characteristic signal including position information.” When limitation 1[d] refers to “said position information,” it necessarily refers back to exactly the same “position information” introduced in 1[b]. See Baldwin Graphics Sys. v. Siebert, Inc., 512 F.3d 1338, 1342-43 (Fed. Cir. 2008) (explaining antecedent basis in patent claims); see also Haemonetics Corp. v. Baxter Healthcare Corp., 607 F.3d 776, 782 (Fed. Cir. 2010).

Virtual Solutions attempts to sidestep the redundancy of limitation 1[d] by arguing that the physical characteristic signal is “inter alia” the position information, thereby suggesting that the physical characteristic signal must include more than the “position information.”<sup>3</sup> Virtual Solutions’s construction contradicts the language of the claim by excluding the embodiment where the physical characteristic signal is the “position information” alone. Virtual Solutions’s “construction” thus improperly tries to rewrite claim 1. Rhine v. Casio, 183 F.3d 1342, 1345 (Fed. Cir. 1999) (admonishing “against judicial rewriting of claims to preserve validity,” noting “if the only claim construction that is consistent with the claim’s language and the written description renders the claim invalid, then . . . the claim is simply invalid”).

Virtual Solutions’s construction is also far too vague to make the claim definite. Virtual Solutions did not identify anything besides “position information” included in the “physical characteristic signal.” [VS Br. at 10.] The very dispute before this Court is whether “physical characteristic signal” is indefinite, which requires Virtual Solutions to set forth the term’s meaning and the signal’s composition in a specific way. Yet, Virtual Solutions offers the vague

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<sup>3</sup> Virtual Solutions’s argument that “physical characteristic signal” means “a signal that includes, inter alia, the position information” is untimely. Microsoft first proposed that “physical characteristic signal” required construction on August 7, 2012. [8/7/12 Ltr., Reply Ex. 1.] Virtual Solutions responded for this term: “No construction required. Plain and ordinary meaning.” [VS 9/5/12 Prop. Claim Constrs., Reply Ex. 2.] Microsoft repeatedly pressed Virtual Solutions to reveal what it deemed the “plain and ordinary meaning” to be. [9/7/12 Ltr., Reply Ex. 5; 9/14/12 Ltr., Reply Ex. 3.] At each point, Virtual Solutions refused to take a position. Even when Microsoft sought permission to file the instant motion, pointing out Virtual Solutions’s failure to take a position on the term’s construction, Virtual Solutions remained silent. [See 9/26/12 Ltr. to Hon. S. Scheindlin, Reply Ex. 4; 10/1/12 Ltr. to Hon. S. Scheindlin, Reply Ex. 5.] Its opposition brief reveals for the first time its construction in hopes that this Court would reward, rather than sanction, such dilatoriness. Because Virtual Solutions’s construction is untimely, this Court should consider it waived. Bettcher Indus., Inc. v. Bunzl USA, Inc., 661 F.3d 629, 640-41 (Fed. Cir. 2011).



definition that this signal merely includes “position information,” which Virtual Solutions construes as “information, or data, that pertains to the location of visitors in the theater area.” [VS Br. at 7.] Virtual Solutions cites no portion of the patent specification that shows that the “physical characteristic signal” includes anything other than this “position information.” Under Virtual Solutions’s construction, the public has no idea what “other” information is included in the “physical characteristic signal.” Such an amorphous definition that allows the “physical characteristic signal” to include literally anything does not clearly set forth the metes and bounds of the claim, as required by the definiteness requirement of section 112(2). IPXL Holdings, LLC v. Amazon.com, Inc., 430 F.3d 1377, 1384 (Fed. Cir. 2005).

To avoid an improper redundancy in limitation 1[d], this limitation requires the “physical characteristic signal” to be discrete from “said position information.” However, limitation 1[b] requires the opposite—that the “position information” is part of the “physical characteristic signal.” This contradiction makes claim 1 insolubly ambiguous. Accordingly, this Court should hold that the “physical characteristic signal” term is indefinite, and the claims are invalid.

**B. “Virtual Environment Stimulus Generator” of Claim 8 Is Functional Claiming, Unsupported by the Requisite Disclosure**

Federal Circuit case law is clear: although a patentee is entitled to claim his invention in terms of what it does rather than how it does it, he may do so only via the path laid out in Section 112(6) of the Patent Act. Lockheed Martin Corp. v. Space Sys./Loral, Inc., 324 F.3d 1308, 1318 (Fed. Cir. 2003). That is the situation for claim 8.

**1. Claim 8 Includes Quintessential Functional Claiming**

The term “virtual environment stimulus generator” in claim 8 is a placeholder for the performance of two functions: (1) “analyze[] said virtual environment database,” and (2) “generate[] a virtual environment stimulus.” [Microsoft R56.1 Stmt. ¶ 36 (ECF No. 46).] It does

not recite, either expressly or by implication, any structure for performing those functions.

Therefore, one of skill in the art is left wondering: How are these functions carried out?

Having no answer, Virtual Solutions seeks refuge in case law that does not apply here. [See VS Br. at 13-14.] Lighting World, Inc. v. Birchwood Lighting, Inc., 382 F.3d 1354 (Fed. Cir. 2004), discusses the difference between a patent claim that recites broad structure for performing a cited function, and one that recites no structure for performing the function. A court will not analyze the former under section 112(6), but must apply section 112(6) to the latter. The Lighting World court held that the term “connector assembly,” though broad, still defined structure to a skilled artisan and, therefore, did not apply section 112(6). Id. at 1360.

Such is not the case here. “Virtual environment stimulus generator” was coined by patentees, and discloses no structure to an ordinary practitioner.<sup>4</sup> Virtual Solutions attempts to avoid this conclusion by quoting piecemeal (non-contemporaneous) definitions of “generator” and “virtual environment.” [VS Br. 13.]<sup>5</sup> These out-of-context definitions do not teach a skilled artisan how to practice the “analyze” and “generate” functions. Even knowing the dictionary definition of “generator,” a skilled artisan would not know how to “analyze” the required data, or “generate” the stimulus. Knowing what a “virtual environment” is likewise does not answer these questions. [See Bobick Decl. ¶¶ 16-18 (ECF No. 42).]

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<sup>4</sup> Tellingly, Virtual Solutions identified no other source that has ever used this term.

<sup>5</sup> Virtual Solutions’s selection of dictionary and Internet sources published in 2009 and later ignores Phillips’s instruction that one should evaluate the ordinary meaning of terms “as of the effective filing date of the patent application,” which is December 10, 1999. Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). For this reason, this Court should afford them no weight. Even if one were to credit these definitions, they support the conclusion that the paradigm for interpreting computer-implemented means-plus-function claims applies to claim 8 because they say that a generator is generic software. [Zavatsky Decl. ¶¶ 31-32 (ECF No. 56); see also Zavatsky Rough at 169:11-170:3, Reply Ex. 6.]

Virtual Solutions's rote application of the so-called "presumption" that the patentee did not intend to invoke section 112(6) also does not resolve the issue. Whether section 112(6) applies is a question of law. Atmel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 1378 (Fed. Cir. 1999). When the claims are written in purely functional terms and seek to cover all ways to perform a recited function despite omitting the word "means," the presumption is easily overcome. Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318 (Fed. Cir. 1999).

Here, Virtual Solutions seeks a remarkably broad interpretation of the term. It would have this Court instruct the jury that "virtual environment stimulus generator" essentially means "any apparatus that performs the recited 'analyze' and 'generate' functions." This interpretation is contrary to the patent laws, and is precisely the situation section 112(6) was enacted to avoid. Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.3d 931, 934 (Fed. Cir. 1987) (en banc) (overruled on other grounds) ("[S]ection 112, paragraph 6, rules out the possibility that any and every means which performs the function specified in the claim literally satisfies that limitation."). This Court should decline to follow Virtual Solutions's path, and should interpret "virtual environment stimulus generator" under section 112(6).<sup>6</sup>

## **2. The Specification Discloses No Corresponding Structure/Algorithm**

In its quest to find a structure in the '353 patent specification that performs the two recited functions, Virtual Solutions points to the same passages quoted in Microsoft's opening brief, and simply asserts the opposite conclusion. These quotations merely state the functions the

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<sup>6</sup> Virtual Solutions's alternate argument that it should prevail under O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed. Cir. 1997), because claim 8 is a method step beginning with the verb "providing" distorts Microsoft's argument and should be rejected. [VS Br. at 14.] Microsoft is not arguing that the term "providing" is the one that invokes section 112(6) treatment. O.I. Corp. does not address the situation in this case, in which the claim requires providing an apparatus of indeterminate structure, defined entirely by the functions performed.

virtual environment stimulus generator performs, not how it performs them. [MS Br. at 13-14.]

Although the specification states, “Virtual Environment Stimulus Generator 27 reads information from the database in order to calculate the occurrence of random events,” it does not state what information is read, or define “calculat[ing] the occurrence of random events.” This discussion is pure functional language, devoid of description as to what data should be read, and what calculating methods should be used. It is too amorphous to inform any person of what the alleged invention actually is—the essence of the definiteness rule. [See Bobick Decl. ¶¶ 20-21.]

Virtual Solutions describes certain diagrams in the ’353 patent, but ignores the core issue: even if those diagrams describe an abstracted system design, they lack necessary detail. Contrary to Virtual Solutions’s claims, the “StimuliGenerator 89 class and its components” do not amount to “identification of a specific computer class and methods” used to implement the “virtual environment stimulus generator.” [VS Br. 16-17.] First, StimuliGenerator is a term apparently coined by the patentees, and denotes no specific technology. Similarly, the methods “CalcStimuli” and “GetStimuliData” are mere monikers—they attach names to the concepts, but the patent does not describe how the elements allegedly perform the function.

Second, even if one assumes that StimuliGenerator 89 is the structure that corresponds to the “virtual environment stimulus generator” in claim 8, this kind of high-level abstract diagram does not satisfy the definiteness requirements. The key structure here, if there is any, must pertain to the recited functions—analyzing the database, and generating the stimuli. The only StimuliGenerator 89-related disclosure concerning these functions is that the first is performed by “GetStimuliData” and the second by “CalcStimuli.” The ’353 patent provides no detail on how either of these methods actually works. The written description has exactly one reference to CalcStimuli and one to GetStimuliData, as follows:

It [StimuliGenerator 89] collects, at a pre-established frequency, through a call to its public method calcStimuli( ) 90, the data relative to the sensors (via the classes defined above) and creates a linked list of stimuli, which will be returned to the calling function.

...  
The method CalcBehavior( ) 103 will compute a velocity vector by associating the data collected by the instance of StimuliGenerator 89 (through a call to the method GetStimuliData( ) 92) to this list of instances using equation 2.

[’353 Patent, Col.11:53-57, 12:25-29 (emphasis added).] The emphasized references are the ’353 patent’s only textual discussion of these methods. Even combined with the figures (which identify the methods by name but give no other description of their operation), they are entirely inadequate to convey the required disclosure.

Indeed, Virtual Solutions’s expert admits that the patent’s discussion of the StimuliGenerator 89 in Column 11, lines 50-57, does not disclose an algorithm for calculating stimuli by the virtual environment stimulus generator. [Zavadsky Rough at 191:20-193:10.] Instead, this discussion of “calcStimuli() 90,” pertains to stimulus generators 23, 24, and 25 in Figure 2, which generate stimuli using data from sensors in the theater area (i.e., sonic sensor 20, positional sensor 21, and haptic sensor 22). [Id.; ’353 Patent, Col. 3:25-29.] One of ordinary skill in the art would have to create a different algorithm based on this description in order for the StimuliGenerator 89 to perform the function of generating a virtual environment stimulus. [Zavadsky Rough at 192:8-193:4.] However, “[i]t is not enough for the patentee simply to state or later argue that persons of ordinary skill in the art would know what structures to use to accomplish the claimed function.” Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech., 521 F.3d 1328, 1337 (Fed. Cir. 2008) (internal quotations and citations omitted). “The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing that structure.” Id.

To construe “virtual environment stimulus generator” according to this disclosure would

perversely give patentees rights over a broad scope of methods for “analyzing” and “generating.” This sort of functional claiming is improper and the claim should be found indefinite as lacking corresponding structure for performing the claimed function. See Noah Sys. Inc. v. Intuit Inc., 675 F.3d 1302, 1312 (“Simply disclosing software, . . . without providing some detail about the means to accomplish the function, is not enough.” (internal quotation omitted)).

## **II. VIRTUAL SOLUTIONS HAS ADMITTED THROUGH ITS CONDUCT MATERIAL FACTS IDENTIFIED BY MICROSOFT UNDER LOCAL RULE 56.1**

Rather than disputing the facts set forth in Microsoft’s Statement of Material Facts with the required particularity, Virtual Solutions responded with mere summary rejections of many of these paragraphs, with citation to only Virtual Solutions’s own statement of facts. [See, e.g., Microsoft R56.1 Stmt. ¶ 22; VS R56.1 Stmt. ¶ 22(ECF No. 55).]

Virtual Solutions’s approach abridges the letter and spirit of Local Rule 56.1, which requires that the statements in a movant’s Rule 56.1 statement be “specifically controverted by a correspondingly numbered paragraph” in the opponent’s statement. LR 56.1(c). If an opponent fails to specifically controvert the movant’s factual statements, the fact is deemed admitted. Id.; see also Archie Comic Publ’ns, Inc. v. DeCarlo, 258 F. Supp. 2d 315, 317-19 (S.D.N.Y. 2003) (finding similar statement by a non-movant “utterly insufficient” and deeming movant’s affected facts established), aff’d, 88 F. App’x 468 (2d Cir. 2004).

Virtual Solutions’s response defeats the entire purpose of Local Rule 56.1, which is to focus the parties on specific factual disputes. As such, this Court should deem Virtual Solutions to have admitted the facts recited in at least the following paragraphs of Microsoft’s Rule 56.1 statement: ¶¶ 3-4, 8-14, 22-24, 27, 30-34, 37-38, 40-41, 43-48, 50-51.

## **III. CONCLUSION**

Accordingly, Microsoft respectfully asks this Court to grant its motion.

Respectfully submitted,

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Dated: November 28, 2012

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## APPENDIX

### **Claim 1 of U.S. Patent No. 6,507,353**

1. A method for generating a behavior vector for a virtual actor in an interactive theatre by interpreting stimuli from visitors, the method comprising:

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  - 1[a] providing a plurality of sensors detecting and sensing at least one physical characteristic at a plurality of positions within a theatre area within which a number of visitors are free to move about, said sensors generating sensor signals;
  - 1[b] interpreting said sensor signals to provide at least one physical characteristic signal including position information, wherein said physical characteristic signal provides information on visitor activity and location within said theater area;
  - 1[c] providing a behavior model for at least one virtual actor;
  - 1[d] analyzing said at least one physical characteristic signal, a change over time of said physical characteristic signal and said behavior model for said at least one virtual actor to generate a behavior vector of said at least one virtual actor using said position information and said at least one physical characteristic signal, said behavior vector being generated in real-time;

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- 1[e] whereby a virtual actor reacts and interacts, in real-time, with visitors depending on the visitors' actions and evolution of said actions.



## **CERTIFICATE OF SERVICE**

A true and correct copy of **MICROSOFT CORPORATION'S REPLY SUMMARY JUDGMENT BRIEF** has been served by e-mail to the counsel listed below, on this the 28th day of November, 2012.

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